AMERICAN JOURNAL OF APPLIED MEDICAL SCIENCE
ISSN: 2996-5101 (online) | ResearchBib (IF) = 10.81 IMPACT FACTOR
Volume-3| Issue-8| 2025 Published: |30-09-2025|

MANIFESTATIONS OF CANDIDIASIS (THRUSH) IN THE ORAL CAVITY

https://doi.org/10.5281/zenodo.17082272

Barnokhon Askarovna Muydinova.
Andijan State Medical Institute. Faculty of Dentistry, Department of Therapeutic Dentistry, Senior Lecturer

Abstract

Oral candidiasis, commonly referred to as thrush, is a frequent opportunistic infection of the oral mucosa caused predominantly by Candida albicans, though non-albicans species are increasingly implicated. This condition manifests in diverse clinical forms, ranging from mild erythematous changes to severe pseudomembranous or hyperplastic lesions, depending on host immunity, oral environment, and predisposing systemic factors. This article provides a comprehensive overview of the clinical manifestations of oral candidiasis, underlying etiological mechanisms, and diagnostic considerations, while emphasizing its clinical significance in general and specialized medical practice.

Keywords

Oral candidiasis, thrush, Candida albicans, pseudomembranous candidiasis, erythematous candidiasis, hyperplastic candidiasis, oral manifestations.

INTRODUCTION

Oral candidiasis is one of the most prevalent fungal infections in humans and is particularly common among individuals with impaired immunity, underlying systemic diseases, or altered oral environments. While Candida species are commensal organisms residing in the oral cavity of nearly 50% of healthy individuals, under favorable conditions they become pathogenic, leading to symptomatic infection. Clinically, thrush has diverse presentations, making its recognition and management a matter of great importance for both dental and medical professionals.

The manifestations of oral candidiasis are closely related to the virulence of the fungal strain, the immune status of the host, and local predisposing factors such as poor oral hygiene, denture use, smoking, or prolonged antibiotic therapy. As thrush can present with variable clinical forms that may mimic other mucosal conditions, careful clinical evaluation is required to ensure accurate diagnosis and effective treatment.

MATERIALS AND METHODS

Pseudomembranous candidiasis, often termed "classic thrush," is the most recognized clinical form. It is characterized by white, creamy plaques or patches resembling curdled milk that can be easily wiped off, leaving an erythematous and sometimes bleeding mucosal surface. This form is typically seen in infants, the elderly, and immunocompromised patients, such as those with HIV/AIDS or individuals undergoing chemotherapy. Clinically, lesions may appear on the tongue, inner cheeks, palate, and lips, often causing a burning sensation, altered taste, or discomfort when eating.

Erythematous candidiasis is less conspicuous but equally significant. It presents as diffuse or localized red patches on the dorsum of the tongue, palate, or buccal mucosa. Unlike pseudomembranous thrush, the lesions are not wipeable. Patients often complain of soreness, burning sensations, and sensitivity to acidic or spicy foods. This form frequently occurs in denture wearers (denture stomatitis) and in individuals following prolonged antibiotic or corticosteroid use, as the suppression of normal flora facilitates fungal overgrowth.

RESULTS AND DISCUSSION

Hyperplastic candidiasis manifests as thickened, white, non-scrapable plaques, commonly located on the buccal mucosa, tongue, or commissures of the lips. This form is less common but is clinically important as it may have premalignant potential. Patients often remain asymptomatic, and lesions may persist for long periods unless treated. Biopsy is frequently recommended to differentiate hyperplastic candidiasis from leukoplakia or other potentially malignant disorders.

Another manifestation of candidiasis in the oral region is angular cheilitis, which appears as painful, erythematous fissures or cracks at the corners of the mouth. It is commonly associated with Candida albicans infection, although bacterial co-infection may also be involved. Factors such as drooling, loss of vertical dimension in denture wearers, and vitamin deficiencies predispose individuals to this condition.

Median rhomboid glossitis is a localized manifestation of candidiasis on the dorsum of the tongue, characterized by a symmetrical, smooth, erythematous area with papillary atrophy. This lesion, often asymptomatic, is associated with chronic Candida infection and is sometimes linked with systemic immunodeficiency.

Diagnosis of oral candidiasis is largely clinical but may be confirmed through laboratory methods such as potassium hydroxide (KOH) smear, culture, or molecular testing. Differential diagnosis is critical, as lesions can mimic lichen planus, leukoplakia, or other mucosal disorders. A comprehensive patient history,

including systemic conditions, medications, and oral hygiene practices, is essential in establishing the diagnosis.

The clinical manifestations of oral candidiasis are closely linked with systemic and local predisposing factors. Systemic conditions such as HIV infection, uncontrolled diabetes mellitus, malignancies, and immunosuppressive therapy create favorable environments for Candida proliferation. Locally, the use of dentures, poor oral hygiene, xerostomia (dry mouth), and smoking significantly increase the risk. Importantly, long-term use of broad-spectrum antibiotics and corticosteroids disrupts the normal oral microbiome, reducing bacterial competition and enabling Candida overgrowth. Understanding these risk factors is crucial, as candidiasis often serves as a clinical marker of underlying systemic diseases [1].

In pediatric patients, especially neonates, thrush is one of the most common fungal infections, often acquired during passage through the birth canal or transmitted via breastfeeding. Lesions typically present as diffuse white patches on the tongue and buccal mucosa, causing irritability and feeding difficulties. In contrast, elderly patients frequently present with denture-associated erythematous candidiasis or angular cheilitis due to reduced salivary flow, nutritional deficiencies, and prolonged denture wear. The spectrum of manifestations across age groups highlights the need for age-specific diagnostic and therapeutic approaches.

Beyond the primary mucosal changes, oral candidiasis can contribute to a range of secondary symptoms and complications. Patients often report dysgeusia (altered taste), halitosis, and discomfort during mastication or swallowing. In severe cases, especially among immunocompromised individuals, infection can extend into the pharynx and esophagus, leading to odynophagia and nutritional compromise. Chronic forms may cause persistent inflammation, increasing the risk of epithelial dysplasia and, rarely, malignant transformation in long-standing hyperplastic lesions [2].

Histopathological examination provides critical insight into the manifestations of oral candidiasis. Pseudomembranous forms demonstrate superficial necrotic debris with fungal hyphae penetrating the keratinized layer of epithelium. Erythematous forms show atrophic epithelium with marked inflammatory cell infiltration, while hyperplastic candidiasis displays epithelial hyperplasia with parakeratosis and intraepithelial microabscesses. These features help differentiate candidiasis from clinically similar conditions such as lichen planus or leukoplakia.

While Candida albicans remains the primary pathogen, recent studies report increasing prevalence of non-albicans species such as C. glabrata, C. tropicalis, and

C. krusei. These strains often exhibit resistance to conventional antifungal drugs, complicating treatment strategies. Clinically, non-albicans candidiasis may present with less typical features, including chronic, refractory lesions or mixed patterns of erythema and hyperplasia. Their rise underscores the importance of microbiological testing and antifungal susceptibility profiling in recurrent or persistent cases [3].

Oral thrush, though medically manageable, has significant psychosocial implications. Patients frequently report embarrassment due to visible oral lesions, halitosis, and speech difficulties. In children, recurrent infections may impair nutrition and growth, while in adults, candidiasis can reduce quality of life by affecting self-esteem and social interactions. This highlights the importance of early recognition and holistic management, including not only pharmacological therapy but also patient education, nutritional support, and psychological reassurance.

The interaction between the host immune system and Candida species plays a decisive role in shaping the clinical manifestations of oral thrush. Under normal conditions, innate immune responses — particularly epithelial cell defenses, salivary antimicrobial proteins (lysozyme, lactoferrin, histatins), and neutrophil activity — suppress fungal colonization. In immunocompromised states, impaired Th1 and Th17 cell-mediated immunity reduces production of cytokines like IL-17 and IL-22, weakening mucosal barriers. This explains why oral candidiasis is often one of the earliest opportunistic infections in HIV/AIDS patients. Furthermore, the presence of biofilm-forming Candida strains enhances resistance to host defenses and antifungal agents, complicating clinical outcomes [4].

In cancer patients undergoing chemotherapy or radiotherapy, candidiasis is a frequent complication due to mucosal damage and neutropenia. Lesions often present as diffuse erythema and pseudomembranous plaques, accompanied by severe oral pain that interferes with nutrition and treatment adherence. Similarly, transplant recipients on long-term immunosuppressive drugs show high rates of chronic hyperplastic candidiasis, which not only persists but also exhibits potential for malignant transformation. These manifestations highlight oral candidiasis as a sentinel condition reflecting the patient's systemic vulnerability.

Clinically, candidiasis can mimic a wide array of oral lesions, necessitating careful differential diagnosis. Conditions such as leukoplakia, lichen planus, geographic tongue, or traumatic keratosis may resemble candidal lesions. Standard diagnostic approaches include potassium hydroxide (KOH) smear, culture on Sabouraud dextrose agar, and molecular assays like PCR to identify Candida species. In recurrent or resistant cases, antifungal susceptibility testing is crucial to guide effective therapy. Histological confirmation with Periodic Acid-Schiff (PAS)

or Gomori methenamine silver stains allows visualization of fungal hyphae within epithelial tissues [5].

CONCLUSION

Oral candidiasis (thrush) represents a multifaceted infection with diverse clinical manifestations ranging from easily identifiable pseudomembranous lesions to subtle erythematous patches or persistent hyperplastic plaques. Recognizing these manifestations is crucial, as thrush not only affects patient comfort and quality of life but may also indicate underlying systemic conditions such as immunodeficiency or diabetes mellitus. Early diagnosis, coupled with identification of predisposing factors, allows for effective antifungal therapy and prevention of recurrence. As such, clinicians must remain vigilant in identifying and managing this common yet significant oral infection.

REFERENCES:

1. Akpan, A., & Morgan, R. (2012). Oral candidiasis. Postgraduate Medical Journal, 78(922), 455–459.
2. Williams, D., & Lewis, M. (2011). Pathogenesis and treatment of oral candidosis. Journal of Oral Microbiology, 3, 5771.
3. Samaranayake, L. P. (2019). Essential Microbiology for Dentistry. 4th ed. Edinburgh: Churchill Livingstone.
4. Scully, C., & Felix, D. H. (2015). Oral medicine — update for the dental practitioner: Red and pigmented lesions. British Dental Journal, 199(10), 639–645.
5. Vila, T., Sultan, A. S., Montelongo-Jauregui, D., & Jabra-Rizk, M. A. (2020). Oral candidiasis: A disease of opportunity. Journal of Fungi, 6(1), 15.